

# FOREST CONTROL

## by CONTINUOUS INVENTORY

"Today I have grown taller from walking  
with the trees."

...Karle Wilson

Milwaukee, Wis. October, 1961 No. 91

LIFE IS AN ALMOST CONTINUOUS EXPERIENCE  
OF HAVING TO DRAW CONCLUSIONS FROM  
INSUFFICIENT EVIDENCE

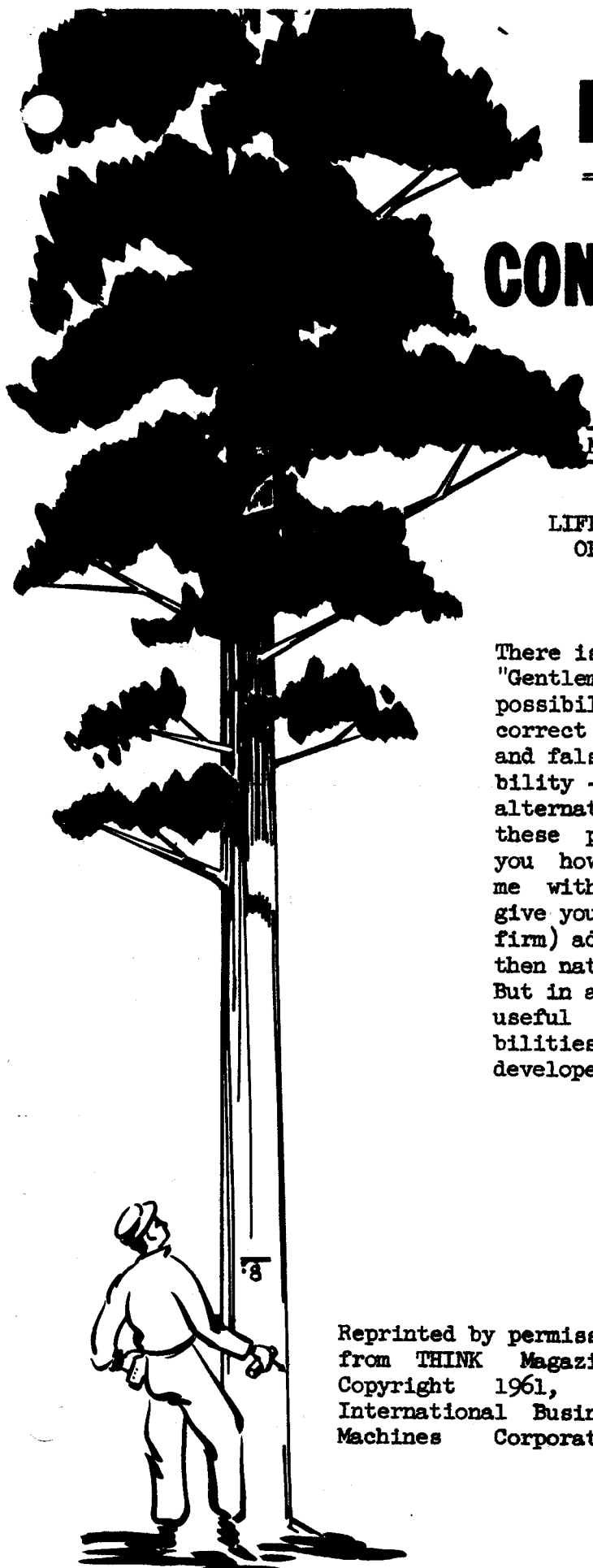
There is another mode of reasoning, which says, "Gentlemen, there are various alternative possibilities. No one of these is certainly correct and true, and no one certainly incorrect and false." There are varying degrees of plausibility --- of probability --- for all of these alternatives. I can help you understand how these plausibilities compare. I can also tell you how reliable my advice is. If you furnish me with a good deal of evidence, then I can give you pretty firm (but still not absolutely firm) advice. If you give me a little to go on, then naturally my advice will be much more shaky. But in all these cases, my advice can give some useful estimate of the comparative plausibilities. This is the kind of logic which is developed in the THEORY OF PROBABILITY.

"Probability: The Odds Are  
That It Affects You."

By Warren Weaver

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## RESISTANCE TO TREE QUALITY GRADING

Sometimes we find folks who oppose the grading of hardwood sawlog tree quality in CFI cases. This is too bad, but there is little we can do to counteract this attitude except from time to time to publish information on the methods, standards and results. This we have done to a limited extent in previous newsletters, and the process will be continued, for we are sure that foresters who object to the grading of tree quality should take another long look at the procedures.

It is important to secure an indicative measure of stand volume, and stand volume growth by tree quality grade, and to translate this information into dollars and cents. There are a number of reasons for this work:

Tree quality grading helps to encourage a priority harvest of high value, low vigor trees.

Tree quality grading presents a clear picture of the value structure of the forest stand.

Tree quality grading is an essential part of any and all forest valuation inventories.

Tree quality grading is helpful in building up a forest growing stock of high potential manufacturing and sale value.

Tree quality grading is directly comparable from one forest inventory to the next, making possible a calculation of tree growth by grade and value.

After experience is gained, most cruisers are willing to admit that their earlier objections to grading standing tree quality are no longer valid. Nevertheless, those who resist continue to raise much the same objection to the process:

Logs are sold by grade or scaled by grade at the mill. It is not necessary to tree grade.

The forester must apply the grade-value concept at the woods level so that he will come to know in time, the true or indicated value increment.

The tree quality grading process is inaccurate.

Often this objection indicates only that the rules are not known or the steps in the process are not clear. In Region 9 tens of thousands of trees have been graded with relative accuracy in CFI cases.

Much time is needed for the job.

Experience of one season is more than enough for the thoughtful grader to adequately learn to assess the butt log grade in every sawlog tree within CFI plots. The time it takes is less than two minutes per sawlog tree, or 10 to 20 minutes per plot sample.

Existing tree quality grading rules are incomplete and inadequate.

It is true that great masses of foundation figures are yet to be collected for the support of the tree grading process. Our basic data are incomplete, but in spite of this, some gauge of the relative value structure of the forest is needed. Existing rules and guides will give this gauge until more adequate directions are prepared.

Tree quality grading rules are hard to learn.

Tree quality grading rules, in contrast to lumber grading rules, are simple and easy to learn once the effort is made to learn them. Only a good memory, and the ability to make a practical and speedy application are needed. Most foresters have these qualifications.

Practical training courses are difficult to find.

In the course of many CFI projects this division has been as helpful as possible in the training of personnel to grade the butt logs of hardwood sawlog trees. We have now established a training ground for this work in a local woods. Whoever wishes to run the gauntlet, and assess the grade of 200 trees may do so after a full day of training. The results immediately sort checked from the Port-a-punch cards, and compared with listings of the data for check, will give ample encouragement to the individual grader. We are willing and eager to spend time and effort assisting those who wish to learn tree quality grading.

CAL STOTT  
Forester  
U. S. Forest Service  
Region 9

September, 1961

LOG GRADE RECOVERY BY TREE QUALITY GRADE  
IN PERCENT OF  
SCRIBNER NET LOG SCALE VOLUME  
YELLOW BIRCH

DBH Class	TREE GRADE NO. 1			TREE GRADE NO. 2			TREE GRADE NO. 3		ALL TREE GRADES			DBH Class
	Log Grade 1	Log Grade 2	Log Grade 3	Log Grade 1	Log Grade 2	Log Grade 3	Log Grades 1 and 2 *	Log Grade 3	Log Grade 1	Log Grade 2	Log Grade 3	
	% of Net Log Scale			% of Net Log Scale			% of Net Log Scale		% of Net Log Scale			
12	0	0	100.0	0	57.0	43.0	0	100.0	0	6.2	93.8	12
14	30.1	30.8	39.1	0	54.9	45.1	15.0	85.0	negl.	44.2	55.8	14
16	41.9	28.1	30.0	14.0	45.0	41.0	29.0	71.0	22.3	35.0	42.7	16
18	52.7	25.0	22.3	31.5	32.5	36.0	41.9	58.1	40.0	28.3	31.7	18
20	61.9	22.2	15.9	46.2	23.6	30.2	53.6	46.4	53.9	24.6	21.5	20
22	69.5	19.5	11.0	59.7	16.5	23.8	63.5	36.5	62.7	21.3	16.0	22
24	76.4	16.4	7.2	71.3	11.9	16.8	71.0	29.0	65.7	20.3	12.2	24
26 & up	82.9	13.1	4.0	82.5	8.6	8.9	77.3	22.7	83.2	12.8	4.0	26 & up
Ave.	65.9	20.3	13.8	30.7	34.8	34.5	37.4	62.6	46.8	26.2	27.0	Ave.
No. of Logs	113	47	166	30	83	118	27	79	149	151	363	No. of Logs
Net Scale	14,190	4,380	2,960	4,040	4,560	4,510	1,980	3,320	18,700	10,450	10,790	Net Scale

NOTE: These values have been prepared for use in data processing tree quality grade information taken in C.F.I. cases. Applicable in the northern hardwood sawlog stands of Michigan and Wisconsin, the basic information comes from the Trout Creek Mill Scale Study of 1940.

The grades of logs in these old data have been changed to harmonize with top diameters of logs in the current log grading standards. The value in this table give the percent of net Scribner log scale in each DBH class, for each tree quality grade. Data curved and interpolated.

\* Insufficient Data for Log Grades 1 and 2 separately.

CAL STOTT  
Forester  
U. S. Forest Service  
Region 9

September, 1961

LOG GRADE RECOVERY BY TREE QUALITY GRADE  
IN PERCENT OF  
SCRIBNER NET LOG SCALE VOLUME  
BASSWOOD

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DBH Class	TREE GRADE NO. 1			TREE GRADE NO. 2		TREE GRADE NO. 3			ALL TREE GRADES			DBH Class
	Log Grade 1	Log Grade 2	Log Grade 3	Log Grades 1 and 2 *	Log Grade 3	Log Grade 1	Log Grade 2	Log Grade 3	Log Grade 1	Log Grade 2	Log Grade 3	
	% of Net Log Scale			% of Net Log Scale		% of Net Log Scale			% of Net Log Scale			
12	0	0	0	50.0	50.0	0	0	100.0	0	4.9	95.1	12
14	37.1	53.3	9.6	52.0	48.0	0	4.0	96.0	negl.	39.6	60.4	14
16	40.8	46.6	12.6	55.0	45.0	0	11.0	89.0	12.8	50.5	36.7	16
18	45.3	40.0	14.7	57.9	42.1	0	24.0	76.0	43.2	39.8	17.0	18
20	49.8	34.0	16.2	61.0	39.0	0	40.0	60.0	43.0	36.5	20.5	20
22	54.9	28.4	16.7	64.6	35.4	0	58.0	42.0	30.6	43.4	26.0	22
24	60.2	23.0	16.8	68.6	31.4	0	77.0	23.0	49.2	29.8	21.0	24
26 & up	66.1	17.8	16.1	72.8	27.2	0	96.0	4.0	50.7	25.4	23.9	26 & up
Ave.	49.4	35.1	15.5	55.8	44.2	0	14.8	85.2	31.4	39.1	29.5	Ave.
No. of Logs	49	46	28	43	39	0	4	29	49	93	96	No. of Logs
Net Scale	4,900	3,490	1,540	2,420	1,920	0	200	1,150	4,900	6,110	4,610	Net Scale

NOTE: These values have been prepared for use in data processing tree quality grade information taken in C.F.I. cases. Applicable in the northern hardwood sawlog stands of Michigan and Wisconsin, the basic information comes from the Trout Creek Mill Scale Study of 1940.

The grades of logs in these old data have been changed to harmonize with top diameters of logs in the current log grading standards. The values in this table give the percent of net Scribner log scale in each DBH class, for each tree quality grade. Data curved and interpolated.

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CAL STOTT  
Forester  
U. S. Forest Service  
Region 9

January 23, 1961

MAJOR FOREST DISEASES OF LIVING TREES

North Central Region

A Reference List for Use with Continuous Forest Inventory in Region 9, Jan. 1961

Major forest type	Disease	Host	Type of Injury	
Aspen-birch	<i>Hypoxylon pruinaum</i>	Aspens	Stem canker	
	<i>Armillaria mellea</i>	Aspen, birch	Root rot	
	<i>Fomes igniarius</i>	Aspen, birch	White heart rot	
	<i>Fomes fomentarius</i>	Birch	White heart rot	
	<i>Nectria sp.</i>	Aspen, birch	Stem canker	
(including hemlock)	<i>Armillaria mellea</i>	All hardwoods, hemlock	Root rot	
	<i>Eutypella parasitica</i>	Red and sugar maples	Stem canker	
	<i>Nectria sp.</i>	Yellow birch, basswood	Stem canker	
		Red and sugar maples		
		American elm		
		Red and white oaks		
	<i>Strumella coryneoidea</i>	Oaks	Stem canker	
	<i>Fomes connatus</i>	Red and sugar maples	White heart rot	
	<i>Fomes everhartii</i>	Oaks	White heart rot	
	<i>Fomes fraxinophilus</i>	White and green ashes	White heart rot	
	<i>Fomes igniarius</i>	Yellow birch, beech, ironwood	White heart rot	
	<i>Polyporus hispidus</i>	Black ash, oaks	White heart rot	
	<i>Hydnum erinaceus</i>	Oaks	White heart rot	
	<i>Hydnum septentrionale</i>	Sugar maple	White heart rot	
	<i>Polyporus glomeratus</i>	Sugar and Red Maples	Yellow heart rot	
	<i>Fomes pini</i>	Hemlock	White pocket rot	
	<i>Polyporus sulphures</i>	Oaks	Brown cubical rot	
	<i>Ceratocystis fagacearum</i>	Oaks	Wilt	
	<i>Ceratocystis ulmi</i>	Elms	Wilt (Dutch elm disease)	
		<i>Dothiorella ulmi</i>	Elms	Wilt
		Phloem necrosis (virus)	Elms	Wilt
		Diebacks (cause unknown)	Hard maple and yellow birch	Dieback
Spruce-fir	<i>Armillaria mellea</i>	Balsam fir, black and white spruces	Root rot	
	<i>Fomes pini</i>	Balsam fir, black and white spruces	White pocket rot	
	<i>Stereum sanguinolentum</i>	Balsam fir, black and white spruces	Brown heart rot	
	<i>Poria subacida</i>	Balsam fir	White butt or root rot	
	<i>Polyporus balsameus</i>	Balsam fir	Brown cubical rot	
	<i>Arceuthobium pusillum</i>	Black spruce	Witches'-broom (dwarf mistletoe)	

Major Forest Diseases of Living Trees

Major forest type	Disease	Host	Type of Injury
Northern pine	<i>Armillaria mellea</i>	All pines	Root rot
	<i>Fomes pini</i>	Jack and white pines	White pocket rot
	<i>Cronartium ribicola</i>	White pine	Stem canker
	<i>Cronartium cerebrum</i>	Jack pine	Stem galls
	<i>Cronartium comptoniae</i>	Jack pine	Stem canker
	<i>Cronartium comandrae</i>	Jack pine	Stem canker
	<i>C. coleosporioides</i>	Jack pine	Stem canker
Plantations	<i>Armillaria mellea</i>	All species	Root rot
	<i>Polyporus schweinitzii</i>	White pine	Brown cubical butt rot
	<i>Cronartium ribicola</i>	White pine	Stem canker
	<i>Cronartium cerebrum</i>	Jack pine	Stem galls
	<i>Cronartium comptoniae</i>	Jack pine	Stem canker
	Jones Disease	Red pine	Cankers, flags, and mortality
	Root rot (cause unknown)	Jack pine	Root rot and mortality

Lake States Forest Experiment Station  
 Forest Service  
 U. S. Department of Agriculture, 1960